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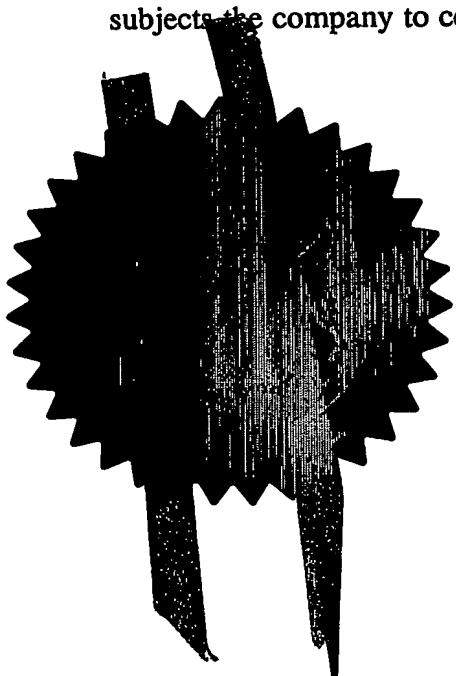
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Request for grant of a patent



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2. Application number 0320545.7

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4. Title of the invention IMPROVEMENTS IN AND RELATING TO TREE STANDS

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8. Is a statement of inventorship and of right to grant a patent required in support of this application?	<u>NO</u>
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Drawing(s) 4

10. If you are also filing any of the following, state how many against each item

Priority documents

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Statement of inventorship and right to grant a patent (PF 7/77)

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We request the grant of a patent on the basis of this application.
Signature _____ Date _____

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02 September 2003

Ben Appleton

12. Contact

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Improvements in and Relating to Tree Stands

Field of the Invention

5 This invention relates to tree stands, and in particular, but not exclusively to Christmas tree stands. The invention also extends to kits including a tree stand, and a method of securing a tree in a tree stand.

10 Background to the Invention

It is known to place cut trees, shrubs or other plants in support apparatus in the form of holders or stands to present the plant in an aesthetically appealing manner.

15 Particularly it is known at Christmas time to place cut trees, usually fir or spruce trees, in Christmas tree stands so that the Christmas tree may be presented in a domestic environment and decorated with appropriate 20 Christmas decorations.

There are various types of tree stands available for securing a Christmas tree. One commonly used type of stand is a cutout section of a tree trunk which has a 25 recess cut or bored partway through the section. The cut trunk end of a Christmas tree is simply inserted into the recess in the stand. The weight of the cutout section effects stabilization of the Christmas tree and reduces the chance of the tree toppling. The circumference of the 30 Christmas tree is usually chosen to be substantially identical or slightly larger than the circumference of the recess in the stand, to enable a snug fit of the tree in the stand.

A problem with the above-mentioned type of stand is that, due to the snug fit of the Christmas tree in the recess, there is no provision for a water reservoir which will 5 enable the cut end of the tree to draw water and increase the working lifetime of the tree.

A second known type of stand comprises a generally cylindrical tube having a number of apertures into which 10 can be threaded screws, and when a tree is inserted into the stand, the screws may be inserted such that they protrude into the cylinder and abut the trunk of the tree in order to tightly restrain the tree in the stand. The stand is commonly connected to, or forms part of a 15 weighted base member which helps to prevent the tree and stand from toppling over in use. Such stands can be used with a water reservoir, but in practice it is difficult to support the tree in a suitable position relative to a water reservoir, and water from the reservoir may easily 20 spill.

It is therefore an aim of preferred embodiments of the present invention to overcome or mitigate a problem of the prior art, whether expressly stated herein or not.

25

Summary of the Invention

According to a first aspect of the present invention there is provided a tree stand comprising a tree-retaining member and a diaphragm, wherein the tree stand is 30 arrangeable, in use with a fluid reservoir comprising an aperture such that in use the diaphragm substantially fills the aperture of the fluid reservoir.

Thus fluid from a fluid reservoir is largely prevented from spillage. Spillage may be a problem when a tree is transported in place in a tree stand, or if a tree stand 5 is accidentally knocked or tipped.

The tree stand is preferably arranged to be detachably connectable to a fluid reservoir, in use. Alternatively the tree stand may be arranged to be immovably fixed to 10 the fluid reservoir, in use.

Suitably, the diaphragm is substantially circular in plan. Suitably, the diaphragm comprises a body region and an edge region. Suitably, the edge region is arrangeable to 15 in use contact an edge of the aperture of a fluid reservoir when the tree stand is arranged with a fluid reservoir.

Suitably, the edge region of the diaphragm is arranged to 20 be push fit within the aperture of the fluid reservoir. Suitably, the edge region of the diaphragm is arranged to extend above and/or below the body of diaphragm. Suitably, the edge region comprises a lip. Suitably, the 25 lip is arranged to form an interference fit joint over the edge of the aperture of a fluid reservoir when the tree stand is arranged with a fluid reservoir.

Alternatively the edge region of the diaphragm may be arranged to be push fit on the outside of the fluid 30 reservoir at or in the region of the aperture of the fluid reservoir.

Suitably, the tree-retaining member is mounted within the diaphragm. Suitably, the tree-retaining member comprises an opening arranged such that when the tree stand is arranged in use with a fluid reservoir, a tree retained 5 therein can communicate with the interior of the fluid reservoir.

Suitably, the tree-retaining member comprises a substantially cylindrical member, and may be positioned 10 concentrically within the diaphragm. Alternatively, the tree-retaining member comprises a substantially frustoconical member, and may be positioned concentrically within the diaphragm. Suitably, opening of the tree-retaining member is arranged at a relatively low point on 15 the diaphragm when the stand is arranged with a fluid reservoir.

The tree-retaining member may extend above and/or below the body of the diaphragm. Preferably the tree-retaining 20 member is the sole means for retaining a tree in the tree stand. Thus preferably, a tree inserted into the tree-retaining member is solely retained by abutment of the tree with the interior surface of the tree-retaining member. Thus preferably the tree-retaining member does 25 not comprise mechanical means to retain a tree. Thus in order to retain a tree in the tree stand a user does not have to effect operation of any mechanical means such as screws or bolts, and does not therefore have to kneel or bend to the ground level to insert and retain the tree.

30

Preferably the diaphragm comprises a passageway therein which effects fluid communication between the exterior and interior of the fluid reservoir.

Preferably the diaphragm comprises a plurality of passageways to effect fluid communication between the exterior and interior of the fluid reservoir.

5 Suitably, an end of the or each passageway is located at a relatively low point on the diaphragm when the stand is arranged with a fluid reservoir.

10 Suitably the passageway or passageways are formed at or near to the tree-retaining member. Suitably, the passageway or passageways are formed toward the centre of the diaphragm.

15 Suitably, the passageways or passageways are defined by a tube.

20 Suitably, the tree-retaining member comprises a cut out section to provide a passageway. In this instance the passageway is in use defined by the tree and the tree-retaining member. Suitably, the edge region of the diaphragm comprises a cut out section to provide a passageway. In this instance the passageway is in use defined by the edge region of the diaphragm and an edge of the aperture of the fluid reservoir. Suitably, the tree-retaining member and/or edge region of the diaphragm 25 comprise a plurality of cut out sections.

30 Suitably, the tree-retaining member is supported by a strengthening rib. Suitably, the tree-retaining member is supported by a plurality of strengthening ribs.

The tree stand may be of any suitable material, but is preferably of plastics material, or of metal (including

alloy). The tree stand may be constructed from polyethylene, ABS, iron, cast iron, aluminium or stainless steel.

5 According to a second aspect of the present invention there is provided a kit comprising a tree stand of the first aspect of the invention and a tree.

10 Preferably the tree is a cut tree suitable for use as a Christmas tree.

15 Suitably the cut tree comprises a trunk which in the region of the cut end thereof, has a circumference substantially identical to the interior circumference of the tree-retaining member.

According to a third aspect of the present invention there is provided a kit comprising a tree stand of the first aspect of the invention and a fluid reservoir.

20 Suitably, the fluid reservoir comprises a tree-retaining member. Suitably, the tree-retaining member comprises a cylindrical member. Suitably, the tree-retaining member projects from a base region of the fluid reservoir.

25 Suitably, the tree-retaining member is supported by a strengthening rib. Suitably, the tree-retaining member is supported by a plurality of strengthening ribs. Suitably the strengthening ribs are disposed on an exterior portion 30 of the tree-retaining member.

Suitably, the tree-retaining member comprises a vein. Suitably, the tree-retaining member comprises a plurality

of veins. Suitably, the veins are disposed on an interior portion of the tree-retaining member. Suitably, the or each vein is arranged to maintain separation between the interior portion of the tree-retaining member and the tree 5 trunk.

Suitably, the tree-retaining member comprises a channel arranged to enable fluid communication between interior and exterior portions of the tree-retaining member.

10 Suitably, the tree-retaining member is positioned concentrically within the fluid reservoir.

15 Preferably the tree-retaining member is the sole retaining means in the fluid reservoir. Thus preferably, a tree inserted into the tree-retaining member is solely retained by abutment of the tree with the interior surface of the tree-retaining member. Thus preferably the tree-retaining member does not comprise mechanical means 20 to retain a tree. Thus in order to retain a tree in the reservoir a user does not have to effect operation of any mechanical means such as screws or bolts, and does not therefore have to kneel or bend to the ground level to insert and retain the tree.

25 Suitably, the fluid reservoir comprises a ledge arranged to support the tree stand when arranged in use with the tree stand. Suitably, the ledge is disposed proximate to the aperture of the fluid reservoir.

30 According to a fourth aspect of the present invention there is provided a method of securing a cut tree in a tree stand, the method comprising the steps of:

(a) providing a tree stand comprising a tree-retaining member and a diaphragm;

5 (b) providing a fluid reservoir comprising an aperture;

10 (c) arranging the tree stand such that the diaphragm substantially fills the aperture of the fluid reservoir; and

(d) inserting the free end of the trunk of a cut tree into the tree-retaining member.

15 By cut tree we mean a tree which has been cut by any suitable means to provide a cut end of the trunk of the tree distal to the apex of the tree. Thus trees may be cut by chopping, cutting, sawing and the like for example.

20 Preferably the method comprises a step before step (d) of shaping a portion of the trunk of the cut tree at the cut end of the tree such that its surface dimensions are suitable to be received in the tree-retaining member.

25 Preferably the method comprises a step before step (d) of shaping a portion of the trunk of the cut tree at the cut end of the tree such that its surface dimensions are suitable to be received in the tree-retaining member; and

30 The cut end of the trunk of the tree may be shaped by any suitable means, including sawing, chopping, shaving, planing or the like.

Preferably the method further comprises the step of providing water to the fluid reservoir, and water may be provided to partly or completely fill the reservoir. The water may be provided at step (b), and/or after the 5 completion of all steps (a) to (d).

It is to be understood that steps (a) to (d) are not necessarily performed from (a) to (d) in alphabetical order. For instance, step (c) may be performed after the 10 completion of all other steps.

Preferably the tree stand and fluid reservoir are as described hereinabove.

15 Brief Description of the Drawings

For a better understanding of the various aspects of the invention, and to show how embodiments of the same may be put into practice, a specific embodiment will now be 20 described, with reference to the accompanying drawings, in which:

Figure 1 illustrates a side view of a preferred embodiment of the tree stand of the invention;

25

Figure 2 illustrates a underside plan view of the embodiment shown in Figure 1;

30

Figure 3 illustrates a side sectional view of the embodiment shown in Figure 1, arranged in use with a fluid reservoir;

Figure 4 illustrates a plan view of a second preferred embodiment of the tree stand of the invention;

5 Figure 5 illustrates a perspective view of a third preferred embodiment of the tree stand of the invention coupled to a fluid reservoir also of the invention;

Figure 6 illustrates a perspective view of the fluid reservoir of Figure 5;

10

Figure 7 illustrates a perspective view of a tree base-retaining member of the fluid reservoir of Figure 5; and

15 Figure 8 illustrates an underside perspective view of the fluid reservoir of Figure 5.

20

Description of the Preferred Embodiments

Referring to Figures 1 and 2 a tree stand 10 comprises a 20 diaphragm 12. The diaphragm 12 comprises a body region 14 and an edge region 16. The tree stand 10 further comprises a tree-retaining member 18 mounted within the diaphragm 12. The tree-retaining member comprises an opening 20 in a substantially cylindrical member 22. The 25 substantially cylindrical member 22 is positioned concentrically within the diaphragm 12, and extends below the body region 14 of the diaphragm 12.

The tree stand 10 is arrangeable in use with a fluid 30 reservoir 30 comprising an aperture therein, e.g. a bucket or plant pot, see Figure 3. When the tree stand 10 is in use with the fluid reservoir 30, the edge region 16 of the diaphragm 12 contacts the edge of the aperture of the

fluid reservoir and the body region 14 and the edge region of the diaphragm 12 substantially fill the aperture of the fluid reservoir 30. In this way any water 32 or other fluid within the fluid reservoir 30 is largely prevented 5 from spilling out of the fluid reservoir 30 if the reservoir is knocked or tipped.

The edge region 16 can extend above and/or below the body region to enable a secure push fit to be made with the 10 edge of the aperture. The edge region 16 may comprise a section of a cylinder, or may be frustoconical as shown in Figure 3 to fit into a range of apertures.

The tree-retaining member 18 is arranged such that when 15 the tree stand 10 is arranged in use with a fluid reservoir, a tree retained therein can communicate with the interior of the fluid reservoir. In use, a tree, such as a Christmas tree, which has been cut down by any suitable means, first has its trunk, at the cut end 20 thereof, shaped to substantially the identical circumference as the interior circumference of opening 20 of the tree-retaining member 18.

The cut end of the tree is then inserted into the tree- 25 retaining member 18. As the circumference of the cut end of the tree is substantially identical to the interior circumference of the retaining member 6, the tree is held tight in the tree stand 10 without the need to use any mechanical means such as screws, bolts or the like, to 30 secure the tree in the stand 10 and prevent it moving about within the tree stand 10. As mechanical means are not needed to secure the tree, the tree stand 10 of the embodiment shown in Figures 1 and 2 is easy to use and a

tree can be inserted without the user having to bend down to ground level and actuate mechanical means. Thus the tree stand 10 is particularly suited for use to elderly and infirm persons.

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As the tree-retaining member 18 is arranged such that when the tree stand 10 is arranged in use with a fluid reservoir, a tree retained therein can communicate with the interior of the fluid reservoir, the tree can contact fluid within the fluid reservoir and draw it up. In this way the tree stand 10 provides a convenient way of supporting a tree relative to a fluid reservoir. Furthermore, as the cut end of the tree substantially fills the opening 20 of the tree-retaining member 18, fluid from the fluid reservoir is impeded from passing from the interior of the fluid chamber to the exterior of the fluid chamber through the opening 20. This reduces fluid spillage if the tree, tree stand or fluid chamber are tipped or knocked.

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The diaphragm 12 comprises passageways 23 therein which effects fluid communication between the exterior and interior of the fluid reservoir when the tree stand 10 is arranged in use with a fluid chamber. The passageways 23 comprise tubes through the diaphragm, and allow a user to add water or other fluid to the fluid chamber without removing the tree from the tree stand 10, or removing the tree stand 10 from the fluid chamber. Therefore, the passageways make the tree stand 10 convenient to use when it is desired to keep the cut end of a tree in contact with water. Keeping the cut end of a tree in contact with water helps to ensure the tree stays fresh for its whole working lifetime. In addition, the passageways prevent a

build up of pressure within the fluid chamber, for example if the temperature of the fluid chamber increases.

Each passageway 23 is located at a relatively low point on 5 the diaphragm 12 when the tree stand 10 is arranged with a fluid reservoir. Therefore, water can be poured on the diaphragm 12 from where it drains through the passageways 23 and into the fluid reservoir. The edge region 16 of 10 the diaphragm 12 can extend above the body region of the diaphragm to allow a suitable buffer for water poured on the diaphragm while that water drains through the passageways 23.

In an alternative embodiment shown in Figure 4 passageways 15 are provided as cut out sections of the tree-retaining member and/or edge region. The cut out sections of the tree-retaining member 40 are not filled by the cut end of the tree, and therefore allow fluid to drain between the tree and the tree retaining member when a tree is arranged 20 in place within the tree retaining member. Similarly, the cut out sections 42 of the edge region of the diaphragm allow fluid to drain between the tree stand and the fluid reservoir when the tree stand is arranged in place within 25 the fluid reservoir.

25 The tree-retaining member 18 is supported by four strengthening ribs 24. The strengthening ribs 24 reinforce the junction between the diaphragm 12 and the tree-retaining member 18, making the tree stand 10 more 30 resistant to stresses arising from movement of the tree relative to the tree stand 10.

Figures 5 shows a third preferred embodiment of the tree stand 10 coupled to a fluid reservoir 34 according to an embodiment of the invention. The tree stand 10 comprises a diaphragm 12. The diaphragm 12 comprises a body region 14 and an edge region (not shown) such that the stand is substantially disc-shaped. The tree stand 10 further comprises a tree-retaining member 18 mounted within the diaphragm 12. The tree-retaining member comprises an opening 20 in a frustoconical member 25. The frustoconical member 25 is positioned concentrically within the diaphragm 12, and extends below the body region 14 of the diaphragm 12.

Referring now to Figures 6 and 8, the fluid reservoir 34 is shown in more detail. The fluid reservoir 34 comprises an aperture 38, the edge of which may be arranged to complement the edge of a tree stand described above to ensure a water tight seal at the interface of the fluid reservoir 34 and the edge of the tree stand. Also shown in Figure 6 is a ledge 36. The ledge 36 can help support a tree stand while in use with the fluid reservoir 34 and acts as a stop to prevent a tree stand from passing too far within the fluid reservoir 34. Figure 6 also shows a tree base-retaining means 70 formed at the centre of a base of the fluid reservoir.

Figure 7 shows the tree base-retaining means 70. The tree base-retaining means 70 comprises a substantially cylindrical member including a plurality of strengthening ribs 72 arranged around its exterior surface, and a plurality of veins 74 arranged around its interior surface. The strengthening ribs 72 extend substantially perpendicular to the base of the fluid reservoir 34, as do

the veins 74. The veins 74 serve to maintain a separation between the cylindrical interior surface of the tree base-retaining member 70 and the trunk of a tree in use retained therein. In this way fluid such as water within 5 the fluid reservoir can pass down the space maintained by the veins 34 and access the lowermost cut end of the tree.

Also shown in Figure 7 is a channel 76 arranged to enable fluid communication between interior and exterior portions 10 of the tree base-retaining member 70, so that excess fluid within the tree base-retaining member 70 can drain away, and so that fluid within the body of the fluid reservoir 34 can access the cut end of a tree retained in the tree base-retaining member 70.

15 In further embodiments the edge region 16 may comprise a lip arranged to form an interference fit joint over the edge of the aperture 38 of the fluid reservoir 34 when the tree stand 10 is arranged with the fluid reservoir 34. 20 The lip may be arranged to form a watertight seal over the edge of the aperture 38 of the fluid reservoir 34.

Thus a tree stand has been described that enables a user to conveniently support a tree relative to a fluid 25 reservoir. The tree stand can be used to support a tree relative to other support structures or bases, for example plant pots or containers that are not capable of holding fluids. The tree stand helps to reduce spillage or water from within a fluid reservoir, which is particularly 30 advantageous in the home, or when trees are being transported. Furthermore, the tree stand is convenient to use, both in terms of arrangement with a tree and for replenishing the contents of the fluid reservoir.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and 5 which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification 10 (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

15 Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated 20 otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the 25 foregoing embodiment(s). The invention extend to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

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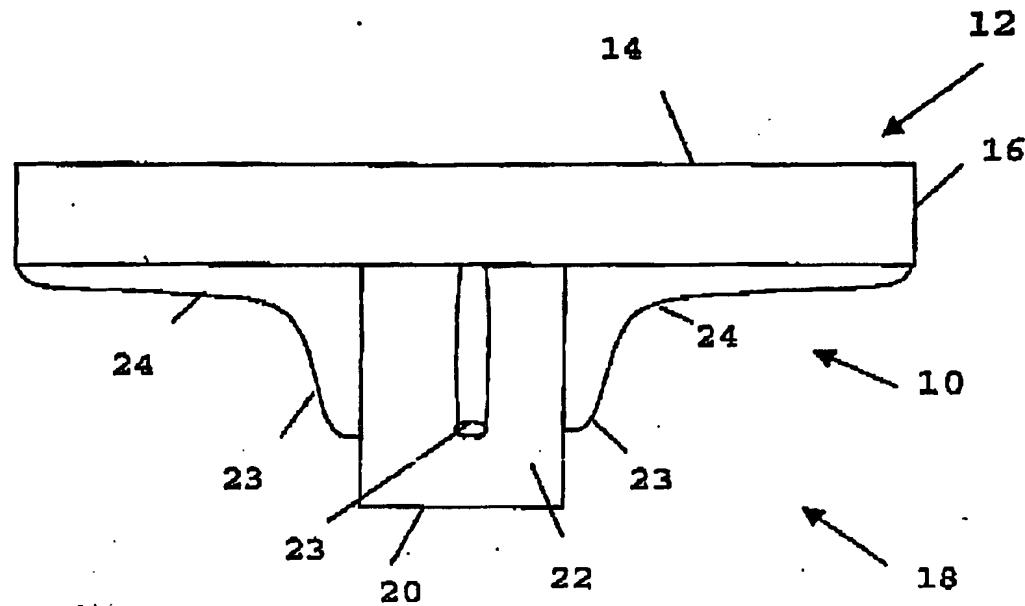


FIG. 1

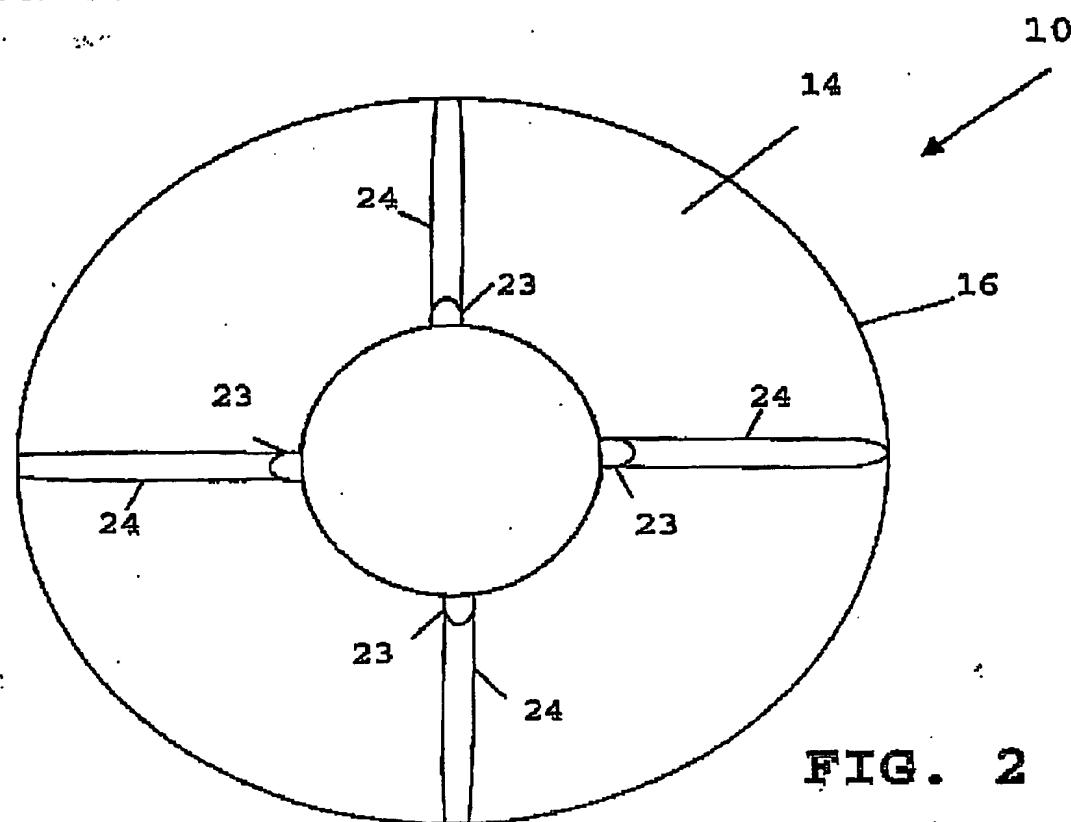
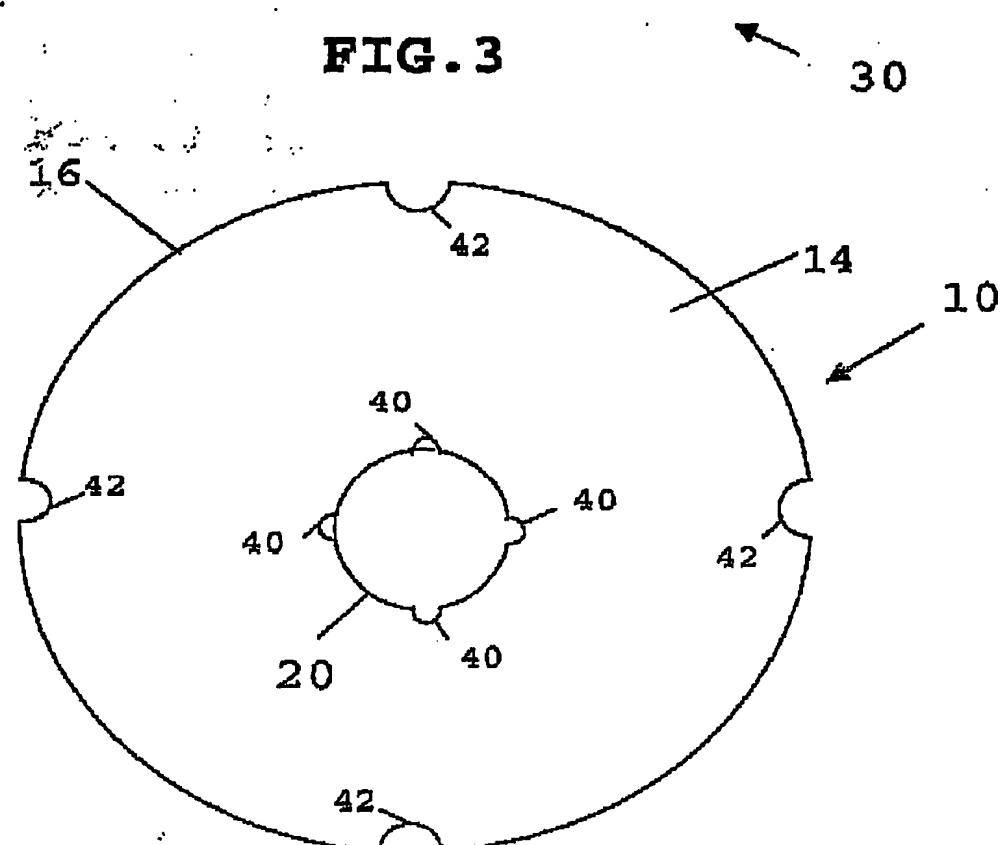
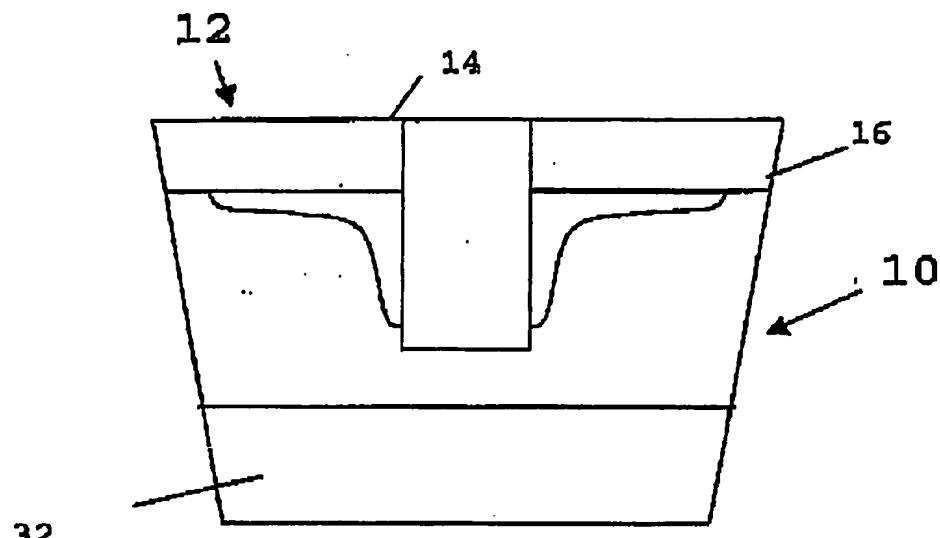


FIG. 2

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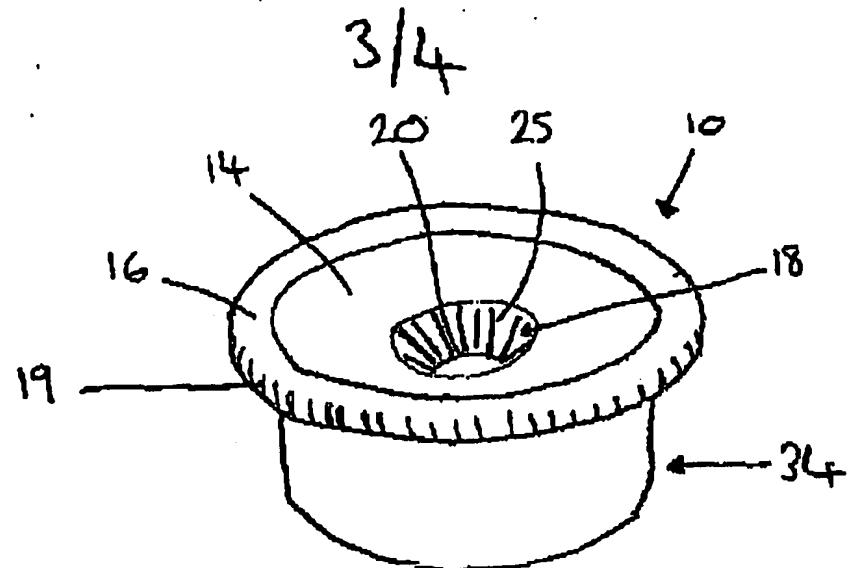


Fig. 5

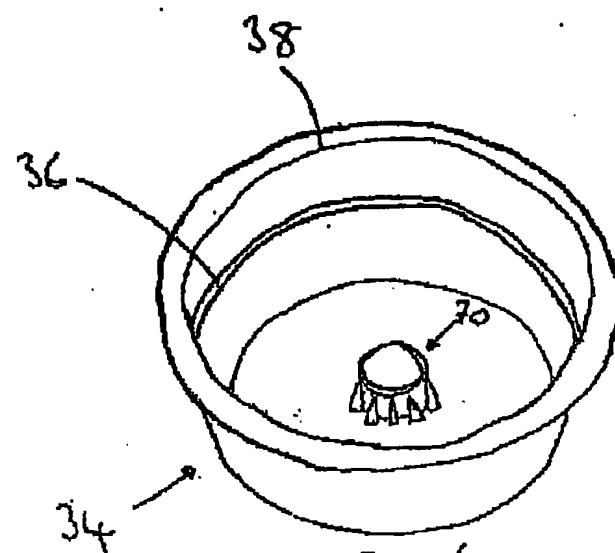


Fig. 6

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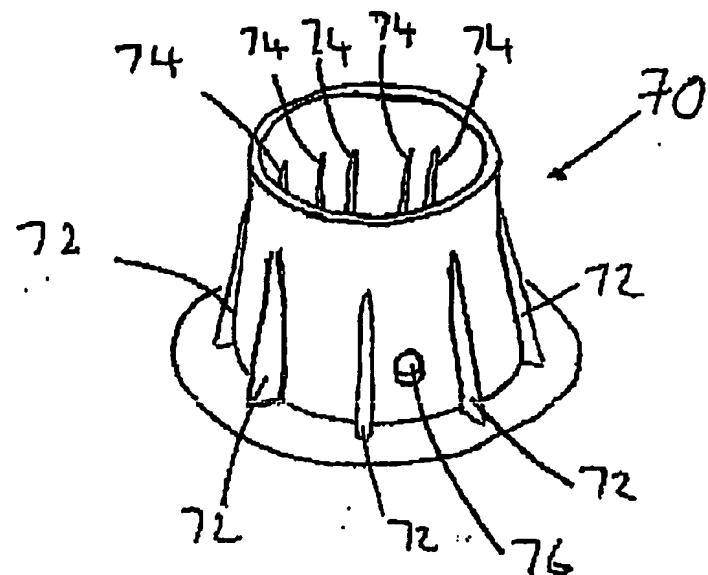


Fig. 7

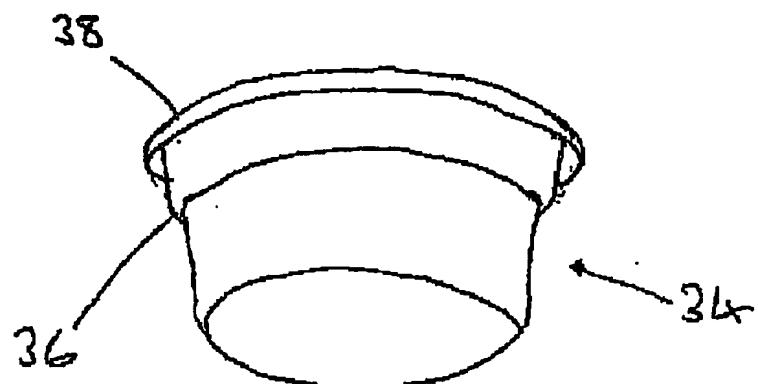


Fig. 8

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